ECUACIONES DE 2º GRADO **FICHA 1**

1. Resuelve las siguientes ecuaciones:

$a)\ \frac{(x-2)(x+2)}{5}-\frac{14x+35}{6}=\frac{52x+5}{10}$

$b)\ (x-2)+(2x-1)(x-3)=x(3x-3)-2x$

2. Resuelve:

$a)\ \frac{3}{4}x^2+\frac{4}{5}x=0$

$b)\ x\left(\frac{3x}{4}-\frac{4}{5}\right)=0$

3. Calcula el valor de x en las siguientes ecuaciones incompletas:

$a)\ x^2+1=\frac{5}{4}$

$b)\ -8x^2-24x=0$

$c)\ 9x^2-36=5x^2$

$d)\ 3x^2+75x=0$

SOLUCIONES:

1. $a)\dfrac{(x-2)^2}{3}+\dfrac{14x-5}{6}=\dfrac{11}{6}\rightarrow\dfrac{2(x-2)^2}{6}-\dfrac{14x-5}{6}=\dfrac{11}{6}\rightarrow 2\left(x^2-4x+4\right)-14x+5=11\rightarrow$

$\rightarrow 2x^2-8x+8-14x+5=11\rightarrow 2x^2-22x+2=0\rightarrow x^2-11x+1=0\rightarrow$ *Aplicamos la fórmula* $\rightarrow$

$\rightarrow x=\dfrac{11\pm\sqrt{(-11)^2-4\cdot1\cdot1}}{2}=\dfrac{11\pm\sqrt{121-4}}{2}=\dfrac{11\pm\sqrt{117}}{2}=\dfrac{11\pm10'82}{2}=$

$=\left.\begin{array}{l}\dfrac{11+10'82}{2}=10'91\\ \dfrac{11-10'82}{2}=0'09\end{array}\right\}\rightarrow\boxed{\begin{array}{l}x_1=10'91\\ x_2=0'09\end{array}}$

$b)(x-2)+(2x-1)(x-3)=x(3x-3)-2x\rightarrow x-2+2x^2-6x-x+3=3x^2-3x-2x\rightarrow$

$\rightarrow 2x^2-3x^2-6x+5x+1=0\rightarrow -x^2-x+1=0\rightarrow x=\dfrac{1\pm\sqrt{(-1)^2-4(-1)1}}{2(-1)}=\dfrac{1\pm\sqrt{1+4}}{-2}=$

$=\boxed{\dfrac{1\pm\sqrt{5}}{-2}}$

2. $a)\dfrac{3}{4}x^2+\dfrac{4}{5}x=0\rightarrow\dfrac{15}{20}x^2+\dfrac{16}{20}x=\dfrac{0}{20}\rightarrow 15x^2+16x=0\rightarrow x(15x+16)=0\rightarrow$

$\rightarrow$ (*Tenemos dos posibilidades*) $\rightarrow\left.\begin{array}{l}x=0\\ 15x+16=0\end{array}\right\}\rightarrow\boxed{\begin{array}{l}x_1=0\\ x_2=-\dfrac{16}{15}\end{array}}$

$b)\,x\left(\dfrac{3x}{4}-\dfrac{4}{5}\right)=0\rightarrow$ (*Tenemos dos posibilidades*) $\rightarrow\left.\begin{array}{l}x=0\\ \dfrac{3x}{4}-\dfrac{4}{5}=0\end{array}\right\}\rightarrow\left.\begin{array}{l}x=0\\ \dfrac{3x}{4}=\dfrac{4}{5}\end{array}\right\}\rightarrow\left.\begin{array}{l}x=0\\ x=\dfrac{4}{5}:\dfrac{3}{4}=\dfrac{16}{15}\end{array}\right\}\rightarrow$

$\rightarrow\boxed{\begin{array}{l}x_1=0\\ x_2=\dfrac{16}{15}\end{array}}$

3. $a)\,x^2+1=\dfrac{5}{4}\rightarrow x^2=\dfrac{5}{4}-1\rightarrow x^2=\dfrac{5-4}{4}\rightarrow x^2=\dfrac{1}{4}\rightarrow x=\pm\sqrt{\dfrac{1}{4}}=\boxed{\pm\dfrac{1}{2}}$

$b)-8x^2-24x=0\rightarrow$ (*sacando factor común*) $\rightarrow -8x(x+3)=0\rightarrow\left\{\begin{array}{l}-8x=0\\ x+3=0\end{array}\right.\rightarrow\boxed{\begin{array}{l}x=0\\ x=-3\end{array}}$

$c)\,9x^2-36=5x^2\rightarrow 9x^2-5x^2=36\rightarrow 4x^2=36\rightarrow x^2=\dfrac{36}{4}\rightarrow x^2=9\rightarrow x=\pm\sqrt{9}\rightarrow\boxed{x=\pm3}$

$d)\,3x^2+75x=0\rightarrow$ (*sacando factor común*) $\rightarrow 3x(x+25)=0\rightarrow\left\{\begin{array}{l}3x=0\\ x+25=0\end{array}\right.\rightarrow\boxed{\begin{array}{l}x=0\\ x=-25\end{array}}$